RHODE ISLAND HISTORIC RESOURCES ARCHIVE

STILLWATER VIADUCT
(RIDOT Bridge No. 278)

RIHRA No. SMTH-0001

Location:	Rhode Island Route 116 over Woonasquatucket River, Smithfield USGS Georgiaville, RI Quadrangle Universal Transverse Mercator Coordinate: 19.289572.4642460
Present Owner(s):	Rhode Island Department of Transportation
Designer:	Rhode Island State Board of Public Roads
Primary Contractor:	C.W. Blakeslee & Sons, Inc., New Haven, CT
Present Use:	Highway Bridge
Significance:	The Stillwater Viaduct is significant as a major work of early-twentieth-century Rhode Island transportation planning and engineering. Completed in 1933, the bridge was an important component of Rhode Island's early attempts to accommodate the automobile age through highway infrastructure construction. It served as a major crossing on the Washington Highway, a circumferential automobile route around the Providence metropolitan area. It is a major Rhode Island engineering work and is one of three large open spandrel reinforced concrete arch bridges in the state.

PART I. HISTORICAL INFORMATION

Introduction

The Stillwater Viaduct (Rhode Island Bridge No. 278), constructed between 1932 and 1933, is an approximately 500-foot-long, multiple span, reinforced concrete bridge spanning the Woonasquatucket River in Smithfield, Rhode Island. The viaduct is significant in the areas of transportation, engineering, and government. It is a component in the Washington Highway (RI Route 116), an early circumferential highway connecting radial routes around the Providence metropolitan area, and is a notable component of Rhode Island's early attempts to accommodate the automobile age through highway infrastructure. The bridge is a large and well-executed example of reinforced concrete open spandrel arch construction, an early-twentieth-century construction method noted for its economy of materials, and demonstrates the technical acumen and attention to aesthetic appearance of the Rhode Island State Board of Public Roads (SBPR). It is the smallest of three major open spandrel reinforced concrete arch bridges in the state, the others being the 1928–1930 Washington Bridge (Bridge No. 200) on Route 195 in Providence and East Providence, and the Ashton Viaduct/Joseph E. Russo Memorial Bridge (Bridge No. 275) on Route 116 in Cumberland and Lincoln, built 1934–1945. The bridge is associated with the ambitious state road building programs of the 1920s and 1930s, and is a large and complicated project with standardized details that illustrates the state's commitment to highway and bridge improvement, and the high organizational, professional, and technical level of the bridge division that designed it.

The Washington Highway

(NOTE: The information in this section was extracted from: Connors, Edward N. *Historic American Engineering Record documentation for the Ashton Viaduct, Cumberland–Lincoln, RI* [HAER RI-43]).

About 1930, plans for a "Cumberland–Coventry Highway" named for George Washington on the 200th anniversary of his birth were made public. This highway was to be composed of sections of new and existing highway that would: "provide a new 'beltline' or circuitous route around Providence, at approximately a constant distance from it. While the Victory Highway (State Route 102), already in existence, may be considered the routes constituting the circumference of a large circle, the Washington Road will make a lesser circle about the city at something like a 15-mile 'wheel'" (*Providence Sunday Magazine* 1931).

The SBPR authorized construction in 1932 of the 4.2 miles of road from Farnum Pike in Smithfield to the Old Louisquissett Pike in Lincoln. While much of the roadway from Washington in Coventry to the Farnum Pike in Smithfield already existed as local roads, a new road was required from Farnum Pike to Ashton. The SBPR chose to span the entire Blackstone River valley "at a high level, obviating the steep grades, sharp turns, and low-capacity turns on the present route which descends to the valley floor" (RIDPW 1943:148). This section of the Washington Highway, completed in July 1934, also required a crossing of the Woonasquatucket River valley at Stillwater. An imposing project in itself, the Stillwater Viaduct served as a testing ground for the massive structure required to cross the Blackstone River 5 miles east at Ashton. In a January 1932 description of the progress on the Washington Highway project, the SBPR Bridge Department described "viaduct structures longer and higher than any heretofore encountered in our state highway work" (SBPR 1932:93). This section of highway also included the first "cloverleaf" intersection in Rhode Island at the intersection of the Washington Highway and the Old Louisquissett Pike (Rhode Island Route 116 and Route 146) (Connors 1994).

Construction of the Stillwater Viaduct

The Rhode Island State Board of Public Roads advertised bids for the construction of the Stillwater Viaduct (Federal Aid Project 67-B) in September 1932. They received 18 proposals ranging in cost from $52, 990.00 to $92,100.00. The contract was awarded to the C.W. Blakeslee & Sons Company of New Haven, Connecticut, who came in with the second lowest bid at $56,990.00. At the time of publication of the SBPR's 1932 *Annual Report*, one abutment and most of the column footings had been completed. The contract included 3,200 cubic yards (cu yds) of concrete and 600 cu yds of site excavation (SBPR 1933:94–95). A notable aspect of the construction process was the method of placement of the forms for the three arch ribs. Instead of conventional timber centerings for the forms, the forms were built on two large, arch-shaped steel trusses that were lowered into place with a crane. The bridge engineering plans indicate provision for deck lighting, which does not appear to have been installed.

The viaduct was completed in August 1933. The final cost was $69,715, or $ 3.25 per sq ft of deck surface area, which was considered notably low for a structure of its type and size. The C.W. Blakesley & Sons Company's superintendent was William Powell. Design and supervision were under direction of SBPR's bridge engineer, Daniel O. Cargill. SBPR resident engineer was J.A. Russo and Francis J. Johnson was bridge construction engineer (Cargill 1934:555–557).

When completed the Stillwater Viaduct was the second largest open-spandrel reinforced concrete bridge in the state, and the second longest structure on the Rhode Island state highway system, behind the multiple-span Washington Bridge completed in 1930 (Clouette and Roth 1987a).

Rhode Island State Board of Public Roads and Bridge Division

The Stillwater Viaduct is associated with the early-twentieth-century drive to improve Rhode Island's outmoded highways and bridges. Existing roads were built for horse-drawn vehicles and many of the pre-1900 bridges crossing the state's numerous rivers and streams were structurally deficient. In 1892 the Rhode Island General Assembly formed a committee to study the condition of state roads. In 1895 the committee reported that 2,420 miles of state roads were in poor condition. This finding led to the formation of the State Board of Public Roads in 1902. About 1900, there was increasing need to replace highway bridges not just because of their age and condition, but because of increased loading from internal combustion-powered vehicles and interurban electric trolleys. In 1912 the General Assembly enacted the Bridge Law, which created the Bridge Department of the State Board of Public Roads under Chief Engineer Clarence L. Hussey. The Bridge Department's first major task was a survey of 156 bridges on public roads and development of plans to repair or replace them. The Bridge Department decided on standardized plans and rugged design standards to accommodate future loads, and chose reinforced concrete for its strength, durability, and low maintenance requirements (Clouette and Roth 1988:30–32; State Board of Public Roads 1913:29–30).

Clarence Loring Hussey, the state's first bridge engineer, formulated the SBPR's bridge replacement program and is generally credited with the engineering and design of the division's early reinforced concrete bridges and their decorative scheme. Hussey was an innovator, and elevated the Bridge Division to a high level of technical competence. Hussey made contributions to reinforced concrete bridge design cut costs by saving materials, including the modified open spandrel design with cantilevered sidewalks incorporated in the Stillwater Viaduct. His crowning technical achievement was the 80 ft long Wickford, RI, reinforced concrete through arch bridge over Wickford Cove, the only one of its type in the state. When Hussey died in 1925 he had established a national reputation as a leading bridge engineer, and the bridge in Wickford, the last he designed, was named the C.L. Hussey Memorial Bridge in his honor (Clouette and Roth 1987b). Hussey's successor, bridge engineer Daniel O. Cargill, designed the Stillwater Viaduct, which was dedicated to Samuel L. Engdahl in 1993. The Stillwater Viaduct's resident engineer, Joseph E. Russo, was the supervisor of construction for the Ashton Viaduct, which was named for him after completion of construction (Mike Hebert, interview 2005).

Concrete Bridges

The Stillwater Viaduct is a large representative example of an important phase in the history of bridge engineering and demonstrates the materials, designs, and construction methods of its period. During the first decade of the twentieth century several options for reinforced concrete bridge designs emerged, including arch, slab, and T-beam, and numerous patents were granted for proprietary steel reinforcing bars and arrangements. During the 1920s and 1930s the SBPR Bridge Division designed hundreds of bridges. For its earliest reinforced concrete arch designs, the division used the patents of Daniel Luten and Walter Denham's National Bridge Company. National Bridge, an Indiana firm, promoted these designs throughout the United States and charged royalties of 20 percent of construction costs for their use. Later, when the Bridge Division undertook its ambitious program of bridge construction and replacement under Clarence Hussey during the 1920s and 1930s, it incorporated Luten-based in-house designs and developed its own standardized detailing scheme. The professionalization of the State Board of Public Roads and the Bridge Division's need to replace many bridges quickly led to the adoption of standard bridge plans for varying length spans. Concrete slab or T-beam bridges were used for short crossings, simple concrete arches were used for spans up to 60 feet, and very long, high crossings called for open-spandrel concrete arches (Clouette and Roth 1988:20, 31–35).

The Stillwater structure is an example of a "viaduct," a high crossing built on tall narrow masonry or reinforced concrete arches, with a series of high supporting towers or piers and carrying a road or railroad over an obstruction such as a valley or highway. The Stillwater Viaduct is a large example of an open spandrel reinforced concrete bridge, a type of design that became popular in the early twentieth century for moderate to long, multiple span highway and railroad bridges. This design incorporated separate arch ribs and vertical columns to support the roadway deck, rather than a massive filled structure or solid spandrel walls. Open spandrel construction was more demanding to design and construct, but was less expensive as it used much less concrete, and could take advantage of local labor and materials. The first documented open spandrel concrete arch bridge was the Campbell's Bridge in Bucks County, PA, a short, approximately 30 ft span built in 1903 (Eric DeLony, interview 2002). This type of bridge design quickly reached maturity in the 1906–1908 Walnut Lane Bridge in Philadelphia, with a main span of 233 feet. This type of construction was incorporated in the Delaware, Lackawanna & Western Railroad's 1912 Tunkhannock Viaduct in Nicholson, PA, the largest concrete bridge in the world, and the 1931 Westinghouse Memorial Bridge near Pittsburgh, PA, the second largest of this type in the world and incorporating a center span 460 feet long (Condit 1961:198–204). As noted above, the Stillwater Viaduct is one of the three largest open spandrel bridges in Rhode Island.

Bridge Aesthetics

By the 1930s, the reinforced concrete open spandrel arch had become a common engineering solution for long, multiple span highway bridges. The new plastic structural medium of reinforced concrete that made long-span arches practical also afforded engineers with new opportunities to incorporate decoration in bridges. Some advocated simple designs with minimal decoration that were more expressive of their engineering, while others adhered to a more conservative City Beautiful architectural approach. After World War I, leading bridge engineers such as Daniel Luten and Henry Grattan Tyrrell rallied against "gingerbread" City Beautiful bridges (Cooper 1997:17–18, 70–78). George Hool, a leading bridge engineer of the time stated: "Concrete is a molded material and there should be no attempt to disguise this fact. Imitation of stone arches, for example, is not to be desired. Expressiveness to most people is the chief source of beauty and when the characteristics of a material are destroyed rather than emphasized, the effect is not only flat and characterless, but may even be untruthful and insincere" (Hool 1916:496). Daniel O. Cargill's design for the Stillwater Viaduct embodied this "honest" aesthetic approach and is of pure, expressive open spandrel design.

By the time the Stillwater Viaduct was constructed, bridge engineers had also developed accepted design formulas to compensate for optical illusions inherent in this type of structure. The leading bridge design technical literature recommended incorporating subtle, incremental variations in heights, lengths and proportions to make multiple-span concrete bridges more graceful. For instance, it was recommended that a bridge be as symmetrical as possible, that the spans increase in width from the outer ends of the bridge to the center, that piers be correspondingly proportioned, and that the elevations of the horizontal elements should be similarly designed (Hool 1916:11–13, 493–527). The Stillwater Viaduct reflects these general guidelines in its geometry and massing.

The Stillwater Viaduct, as discussed by its designer, SBPR bridge engineer Daniel O. Cargill, "exemplifies several ideas of increasing importance to the bridge and highway engineer" at the time of its construction. According to Cargill, "particular care was taken to build a structure of fine appearance. Careful thought was given to the general appearance of the bridge, not only in proportioning and spacing members but also in details. The corners of the posts are deeply beaded and chamfered, and caps are corbelled out to provide proper seating of fascia girders, combining good appearance with efficient use of materials. The fascia girders are deeper than the interior beams, to be in proper proportion to the general dimensions of the structure." The viaduct's design also included "measures to avoid staining and disfiguration from weather and drainage, and thus preserve the good general appearance of the bridge" that included "drip elements or arises that harmonize with the general lines of the structure and carry the surface water away from the lower surfaces." Special attention was paid to building strong, distortion-free wood forms that eliminated distortion and waves in the cast concrete, and the entire surface of the bridge was rubbed with Carborundum brick to remove form lines and to give it an even surface finish (Cargill 1934:555–557). The square baluster railings and blue-and-white glazed identification tiles in the endposts identify the viaduct as a SBPR structure of its period.

PART II. DESCRIPTIVE INFORMATION

The Stillwater Viaduct (Rhode Island Bridge No. 278) carries the Washington Highway (State Route 116) over the Woonasquatucket River in Smithfield, Rhode Island. The reinforced concrete bridge is located east of the Stillwater Reservoir, approximately 800 feet east of the Route 116/5/104 intersection. The 13-span structure measures 449 feel long overall by 52.5 feet wide at the outside edges. It incorporates 12 reinforced concrete beam deck approach spans of varying lengths, and its prominent and distinctive feature is its 80-foot long open-spandrel arch over the river channel. The bridge is unmodified with the exception of sidewalk repairs and installation of Jersey barriers at the curblines.

The bridge deck is supported by 12 concrete T-beam approach spans that decrease in length from 42 feet at the river arch to 10 feet at the abutment walls. The southwest approach is approximately 235 feet long, and the northeast approach is approximately 95 feet long. The approach spans are carried on 10 concrete post bents consisting of three square columns with a single horizontal beam at the top and individual pyramidal bases that are footed in bedrock on the northeast approach and hardpan on the southwest approach. The columns in each bent are transversely spaced 18 ft, 4 inches apart, and are approximately 2 feet thick, tapering slightly from bottom to top.

The main river arch span is an open-spandrel, three-ribbed, reinforced concrete arch measuring 80 feet across at the spring line and 36.5 inches in height above normal water level. Each arch rib is 10 feet wide, and tapers from a thickness of 4 feet at the spring line to 1.5 feet at the crown. The arch ribs are spaced 6 feet apart.

The deck support framing system consists of eight longitudinal reinforced concrete T-beam stringers framed horizontally into 36 horizontal floorbeams that extend out from the sides of the stringers to form tapered cantilever sidewalk brackets. The outer (fascia) stringers are deeper and thicker than the interior ones.

The deck, which is integrally cast into the T-beam deck support system, descends at a 3 percent grade from northeast to southwest. The bituminous asphalt paved roadway is 40 feet wide from curb to curb, with a 4-ft-8-inch-wide concrete sidewalk on each side of the roadway. The sidewalks are badly deteriorated with holes covered with plywood sheets, and Jersey barriers running the length of each side to keep pedestrians off the sidewalks.

The railings consist of molded concrete railings supported by panels of square chamfered concrete balusters interrupted by 2-foot-wide rectangular piers. The endposts incorporate glazed white enamel tiles with blue letters indicating the bridge's name, number, date, and contractor. The four piers over the ends of the arch span are 14 feet long, and each of the piers at the west end of the arch contains a bronze plaque on the inboard, sidewalk side with an inscription that reads:

> "THE SAMUEL A. ENGDAHL BRIDGE, BRIDGE NO. 278, IN MEMORY OF SAMUEL A. ENGDAHL, BRIDGE ENGINEER, STATE OF RHODE ISLAND 1928-1976, IN RECOGNITION OF HIS DEDICATED SERVICE IN THE DESIGN & ENGINEERING OF BRIDGES, DEDICATED 1993."

The bridge's decorative scheme appears to be limited to the railings, and some edge treatment of primary members, most notably the deeply incised corners of the vertical posts. There is, however, a subtle integration of the bridge's overall proportions and its decorative scheme. The overall proportions of the bridge are such that the distance between the vertical approach span piers increases from the outer ends of the bridge to the arch span, and the distance between the exposed horizontal floorbeam sidewalk cantilever brackets expands within each correspondingly long section of deck. The locations and lengths of the railing piers and baluster panels above were designed to correspond with the locations of the structural members below, and are directly proportional to the spacing of these structural members. An unusual feature of the bridge is the pair of cantilevered smoke deflector hoods, plain rectangular shelves that project out from the deck fascia beams on either side of the bridge over the now-abandoned right-of-way of the former New York, New Haven & Hartford Railroad Pascoag Branch.

(Dimensions and construction details were taken from copies of original 1932 SBPR drawings on file at the Rhode Island Department of Transportation, Smith Street, Providence, RI).

PART III. SOURCES OF INFORMATION

A. Engineering drawings:

Contract Drawings for the Stillwater Viaduct, State of Rhode Island. C.W. Blakeslee, New Haven, CT, Consulting Engineer. Plans on file at Rhode Island Department of Transportation, Smith Street, Providence, RI.

B. Historic views:

Rhode Island Department of Transportation Hussey Archive, Rhode Island Department of Transportation, Smith Street, Providence, RI.

C. Interviews:

DeLony, Eric, Chief, Historic American Engineering Record (ret.), interview with author, 2002.

Hebert, Michael. Supervising Historic Preservation Specialist, Rhode Island Department of Transportation, interview with author, 2005

D. Bibliography:

Cargill, Daniel O.
1934 "Low Cost Achieved on Heavy-Duty Highway Bridge," *Engineering News-Record.* May 3:555–557.

Clouette, Bruce, and Matthew Roth
1987a *Rhode Island Department of Transportation Historic Bridge Inventory Form for the Stillwater Viaduct.* On file at Rhode Island Department of Transportation, Providence, RI.

1987b *Rhode Island Department of Transportation Historic Bridge Inventory Form for the C.L. Hussey Memorial Bridge (Bridge No. 11*). On file at Rhode Island Department of Transportation, Providence, RI.

1988 *Rhode Island Historic Bridge Inventory, Part I: Inventory and Recommendations.* Rhode Island Department of Transportation, Providence, RI.

Condit, Carl
1961 *American Building Art: The Twentieth Century.* Oxford University Press, New York, NY.

Connors, Edward N.
1994 *Consensus Determination of National Register of Historic Places Eligibility for the Rhode Island Routes 146/114 Highway Interchange, Lincoln, Rhode Island.* Prepared by Edward Connors and Associates, Barrington, RI, for the Maguire Group, Providence, RI.

Connors, Edward N.
1996 *Historic American Engineering Record Documentation of the Ashton Viaduct, Cumberland■ Lincoln, Rhode Island.* Prepared by Edward Connors and Associates, Barrington, RI, for the Rhode Island Department of Transportation, Providence, RI.

Cooper, James L.
1997 *Artistry and Ingenuity in Artificial Stone: Indiana's Concrete Bridges, 1900■1942.* Published by the Author.

Hool, George A.
1916 *Reinforced Concrete Construction: Volume III, Bridges and Culverts.* McGraw-Hill Book Company, Inc., New York, NY.

Providence Sunday Magazine
1931 "Road Honors Washington: Cumberland – Coventry Highway to be Named for Father of Country in 200th Anniversary Year." 5 July:4.

State Board of Public Roads
1913 *First Annual Report of the State Board of Public Roads of the State of Rhode Island, January,1913.* Oxford Press, Providence, RI.

1932 *Thirtieth Annual Report of the State Board of Public Roads of the State of Rhode Island, January, 1932.* Oxford Press, Providence, RI.

1933 *Thirty-first Annual Report of the State Board of Public Roads of the State of Rhode Island, January, 1932.* Oxford Press, Providence, RI.

Rhode Island Department of Public Works (RIDPW)
1943 *Eighth Annual Report of the Rhode Island Department of Public Works.*

E. Likely sources not yet investigated: None identified.

F. Supplemental material: None included.

PART IV. PROJECT INFORMATION

The Rhode Island Department of Transportation (RIDOT), under the auspices of the U.S. Department of Transportation, Federal Highway Administration (FHWA), is planning to rehabilitate the Stillwater Viaduct, Bridge No. 278, Washington Highway (RI 116) over the Woonasquatucket River in Smithfield, Rhode Island. The bridge was determined eligible for listing in the National Register of Historic Places by the Keeper of the National Register in 1989 and is a contributing resource of the John H. Chafee Blackstone River Valley National Heritage Corridor.

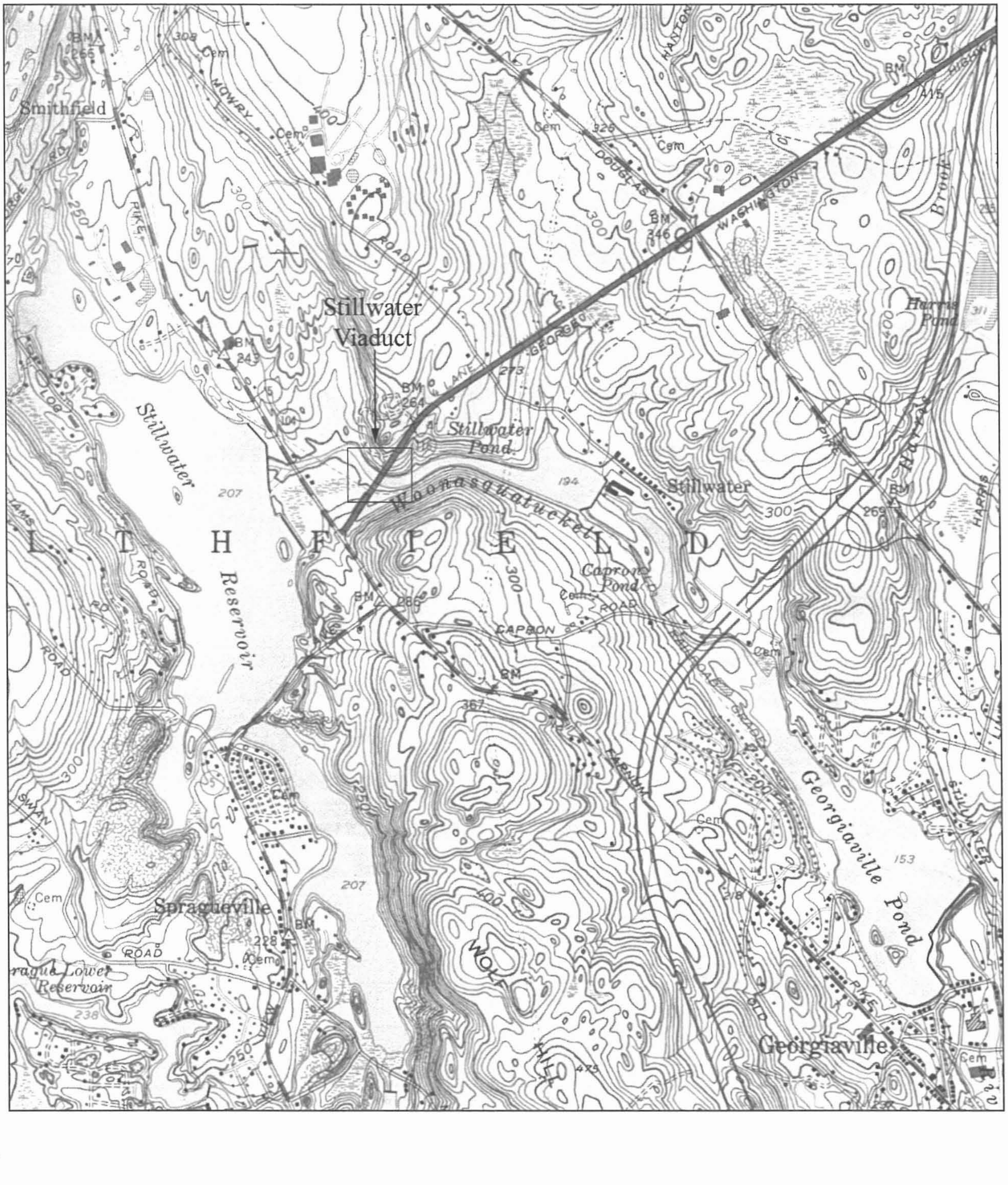
The proposed project seeks to address significant safety and transportation deficiencies posed by deteriorated elements of the bridge by demolishing the superstructure down to the supporting columns and arches and replacing it with a new superstructure that would be similar in design to the original. In accordance with Section 106 of the National Historic Preservation, as amended (36 CFR 800), the FHWA found that the project would have an adverse effect on the historic qualities of the bridge and consulted with the Rhode Island State Historic Preservation Officer (RISHPO) and the John H. Chafee Blackstone River Valley National Heritage Corridor Commission (JHCBRVNHCC) about ways to avoid, minimize, or mitigate the impacts. The consultation resulted in the execution of a Memorandum of Agreement (MOA) among the consulting parties.

This documentation was prepared in accordance with Stipulation I of the MOA, which requires the written and photographic recordation of the Stillwater Viaduct in accordance with Rhode Island Historic Resources Archive standards. PAL (The Public Archaeology Laboratory, Inc.) of Pawtucket, Rhode Island, was retained by Vanasse Hangen Brustlin, Inc., of Providence, Rhode Island, on behalf of the RIDOT, to complete the documentation. This report was completed in November 2005 by Matthew A. Kierstead, industrial historian.

The large format archival photography was undertaken in October 2005 by Robert Brewster of Warren Jagger Photography, Inc., Providence, Rhode Island.

Prepared by: Matthew A. Kierstead
Title: Industrial Historian
Affiliation: PAL, Pawtucket, RI 02860
Date: November 2005

LOCATION MAP (USGS Georgiaville, RI)
Scale: 1:24,000
1954 (Photorevised 1970 and 1975)



RHODE ISLAND HISTORIC RESOURCES ARCHIVE

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(RIDOT Bridge No. 278)
Woonasquatucket River
Smithfield
Providence County
Rhode Island

Photographer: Robert Brewster, Warren Jagger Photography, Inc., Providence, RI, October 2005

FIELD PHOTOGRAPHS

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HISTORIC VIEWS

NOTE: The following historic views are drawn from the Rhode Island State Archives Collection Number 1851, officially known as the Rhode Island Department of Transportation Hussey Archive. This archive is a series of photographs taken by the State Board of Public Roads Bridge Division of state bridge construction beginning with the formation of the Bridge Division in 1912. The photographic prints are kept at the RIDOT offices on Smith Street, Providence, and the negatives are kept at the Rhode Island State Archives on Westminster Street, Providence. The photographic prints are marked by bridge number. The print collection at RIDOT also includes oversize prints that are not numbered and have not been cataloged.

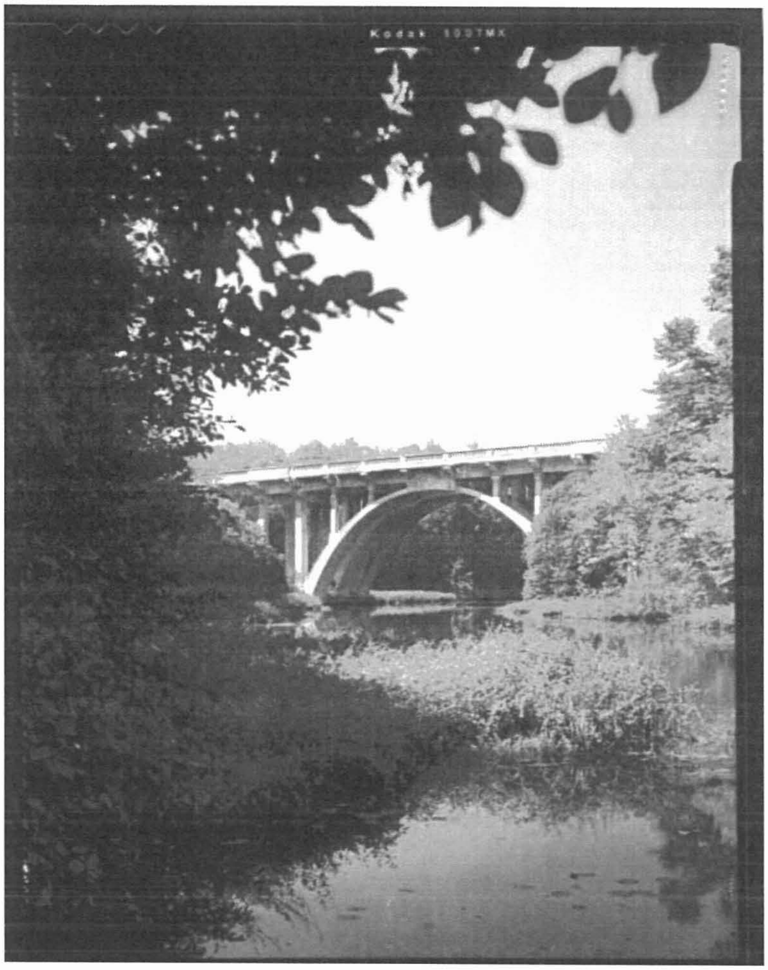
SMTH-0001-16	Historic view of construction site showing posts and arch spans under construction looking north. Photo No. 278100, April 5, 1933. Rhode Island Department of Transportation, Clarence Hussey Bridge Photo Collection, Smith Street, Providence, RI.
SMTH-0001-17	Historic view of arch centerings and forms looking northeast. Photo No. 278124, May 9, 1933. Rhode Island Department of Transportation, Clarence Hussey Bridge Photo Collection, Smith Street, Providence, RI.
SMTH-0001-18	Historic view of construction site looking northwest. Photo No. 278101, April 5, 1933. Rhode Island Department of Transportation, Clarence Hussey Bridge Photo Collection, Smith Street, Providence, RI.
SMTH-0001-19	Historic view of arch centerings looking northwest. Photo No. 278125, April 5, 1933. Rhode Island Department of Transportation, Clarence Hussey Bridge Photo Collection, Smith Street, Providence, RI.
SMTH-0001-20	Historic view of completed arch looking north. Photo No. 278215, September 13, 1933. Rhode Island Department of Transportation, Clarence Hussey Bridge Photo Collection, Smith Street, Providence, RI.
SMTH-0001-21	Historic aerial view of completed bridge looking south, ca. 1933. Rhode Island Department of Transportation, Clarence Hussey Bridge Photo Collection, Smith Street, Providence, RI.

ENGINEERING DRAWINGS

NOTE: Hard and electronic copies of the 1932 *Contract Drawings for the Stillwater Viaduct, State of Rhode Island* by the C.W. Blakeslee, New Haven, CT, Consulting Engineer, are kept at the Rhode Island Department of Transportation Plan Room on Smith Street, Providence, RI.

SMTH-0001-22	Photographic copy of drawing: SHEET NO. 278.002, GENERAL PLAN, October 11, 1934. Rhode Island State Board of Public Roads, Providence, RI.
SMTH-0001-23	Photographic copy of drawing: SHEET NO. 278.004, PLAN OF ARCH SPAN, October 11, 1934. Rhode Island State Board of Public Roads, Providence, RI.
SMTH-0001-24	Photographic copy of drawing: SHEET NO. 278.005, ARCH ELEVATION, October 11, 1934. Rhode Island State Board of Public Roads, Providence, RI.
SMTH-0001-26	Photographic copy of drawing: SHEET NO. 278.006, ARCH SECTIONAL ELEVATION, October 11, 1934. Rhode Island State Board of Public Roads, Providence, RI.
SMTH-0001-26	Photographic copy of drawing: SHEET NO. 278.007, ARCH SECTIONS, September 24, 1932. Rhode Island State Board of Public Roads, Providence, RI.

Photo 1



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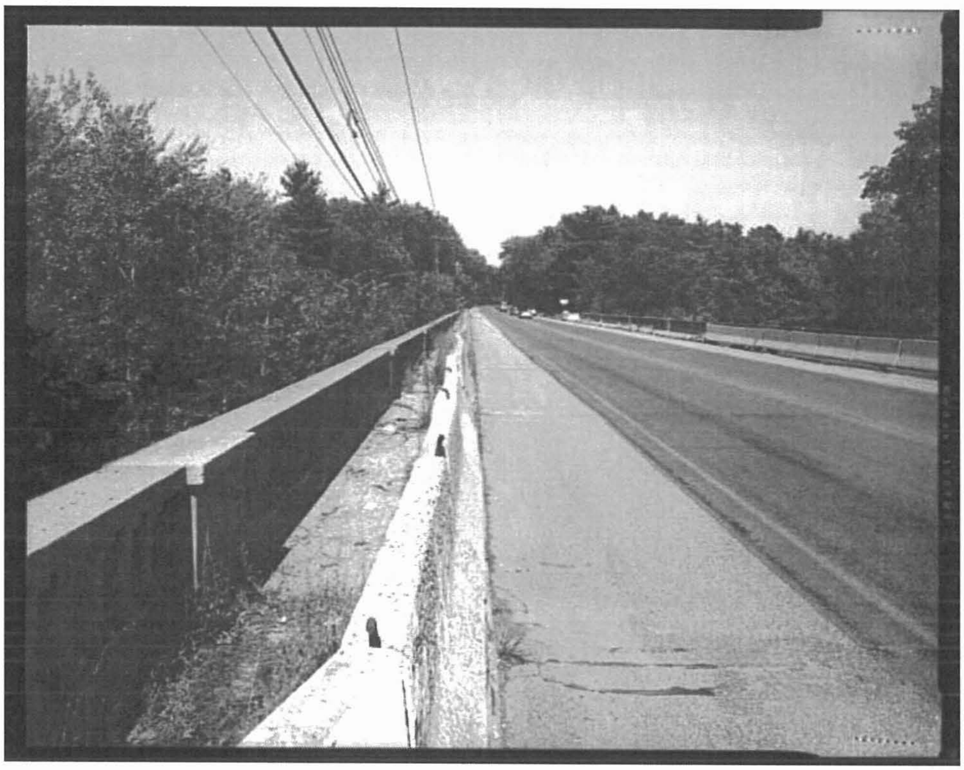

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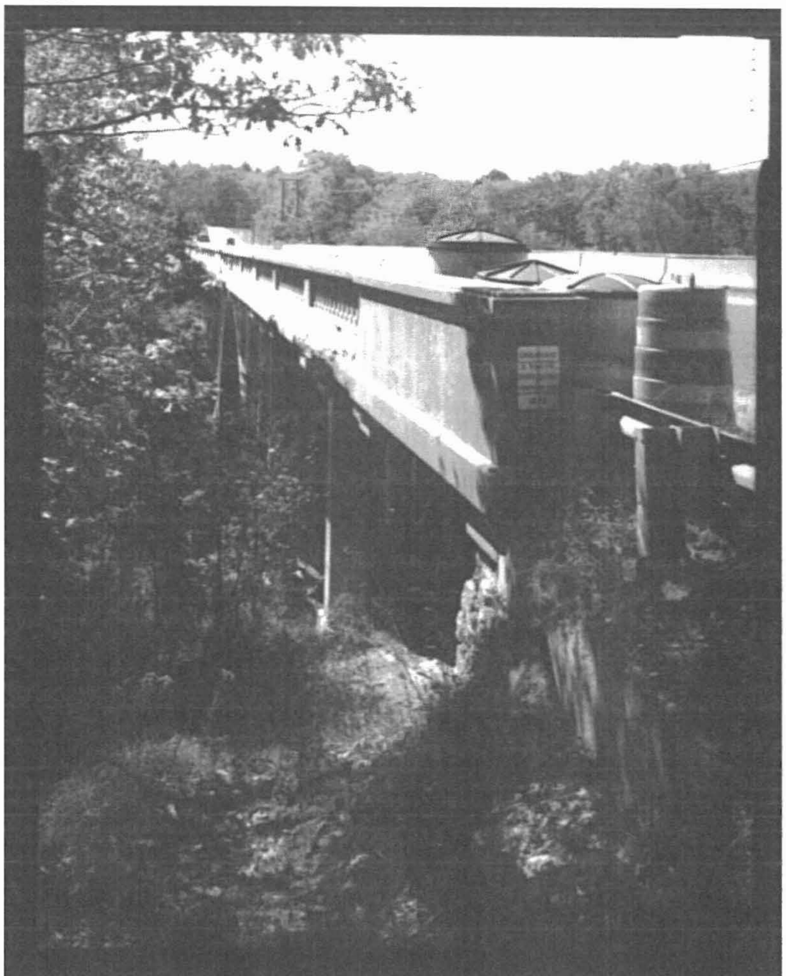
Photo 4



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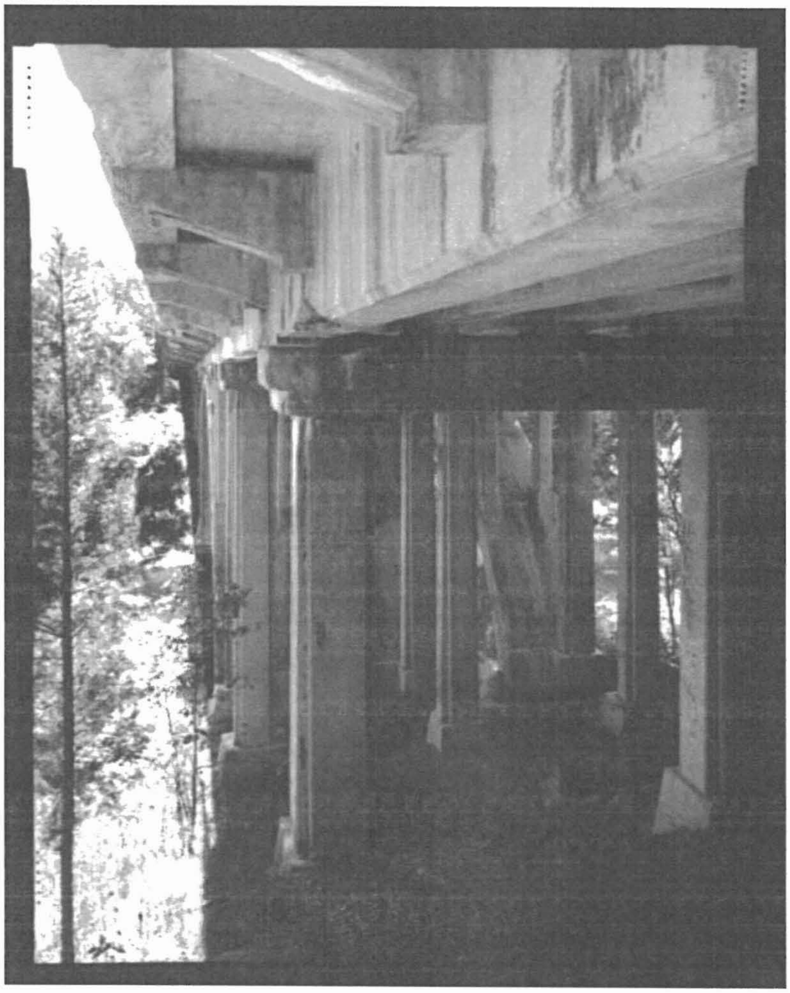

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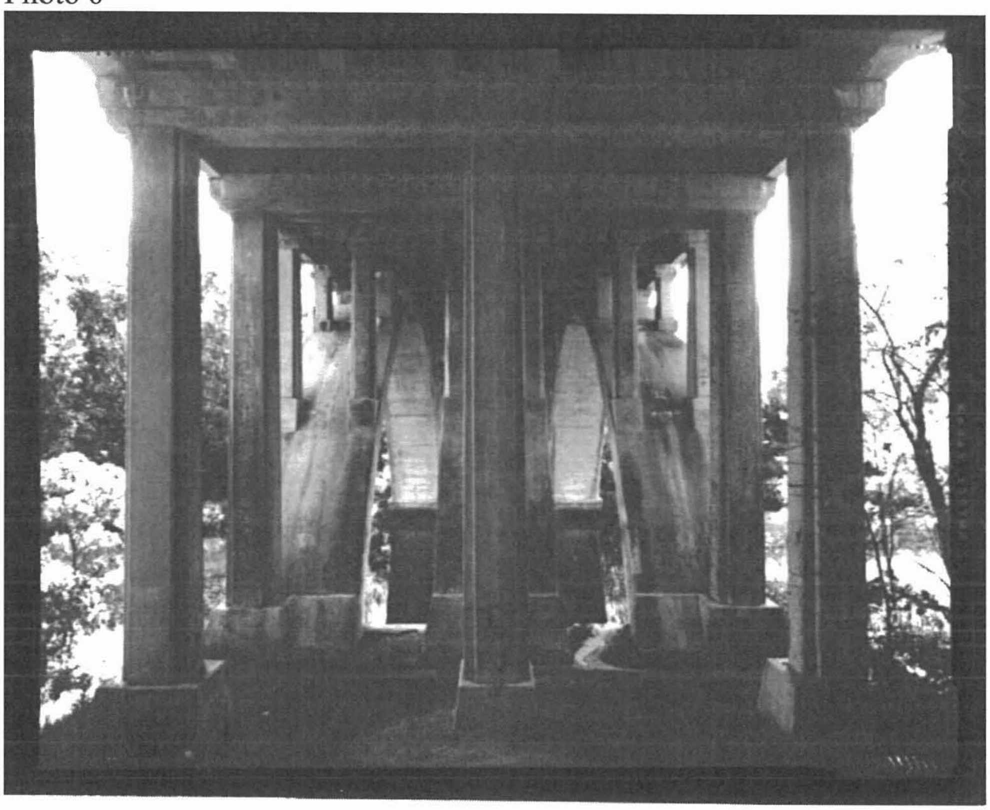

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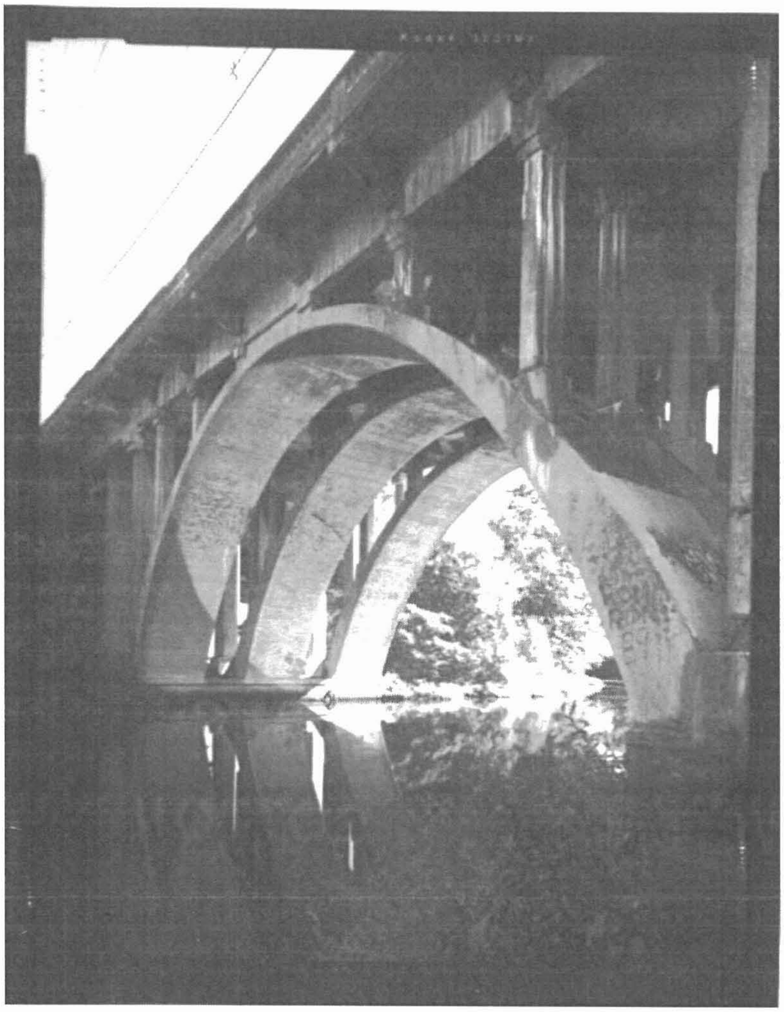

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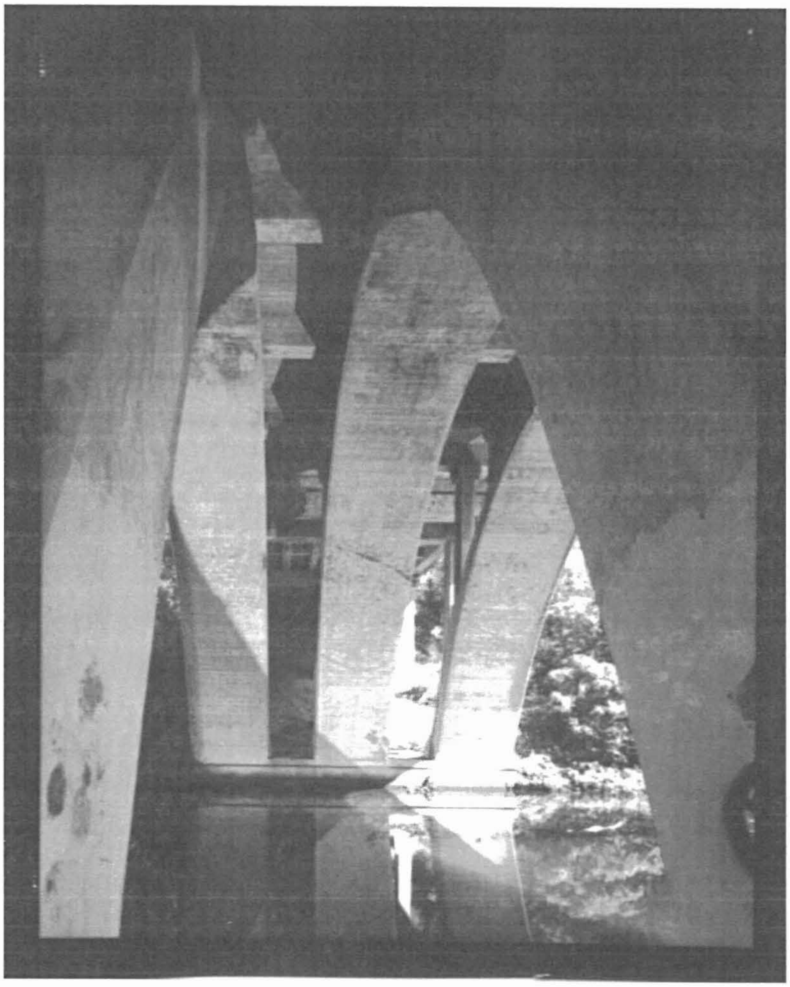

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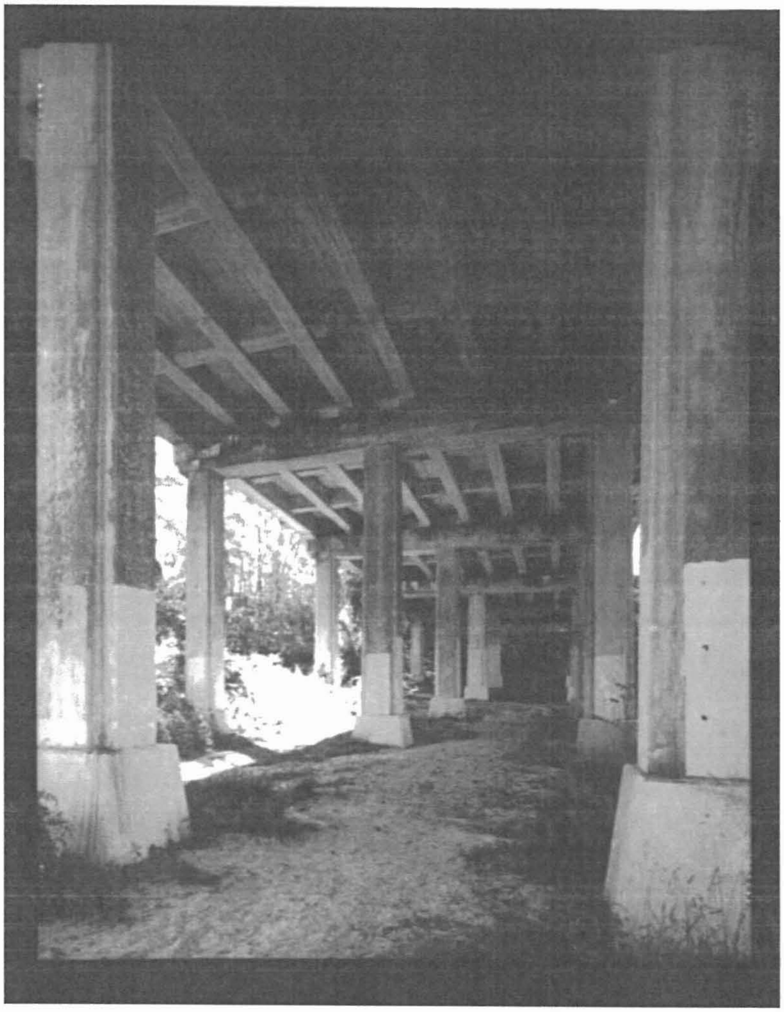
Photo 10



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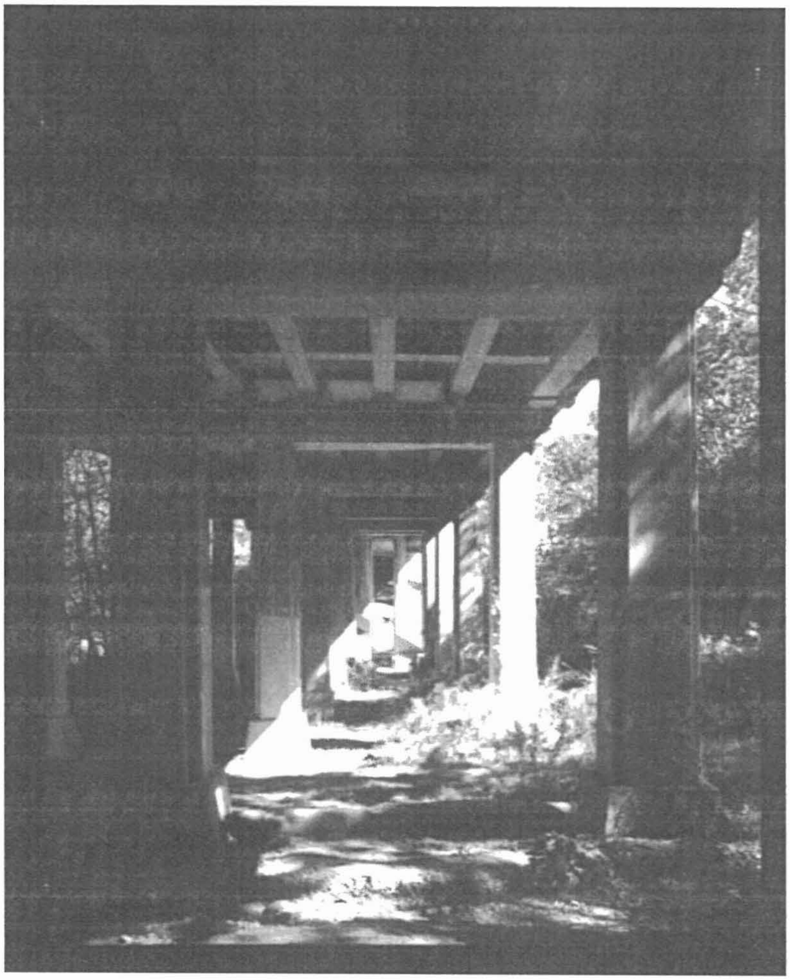

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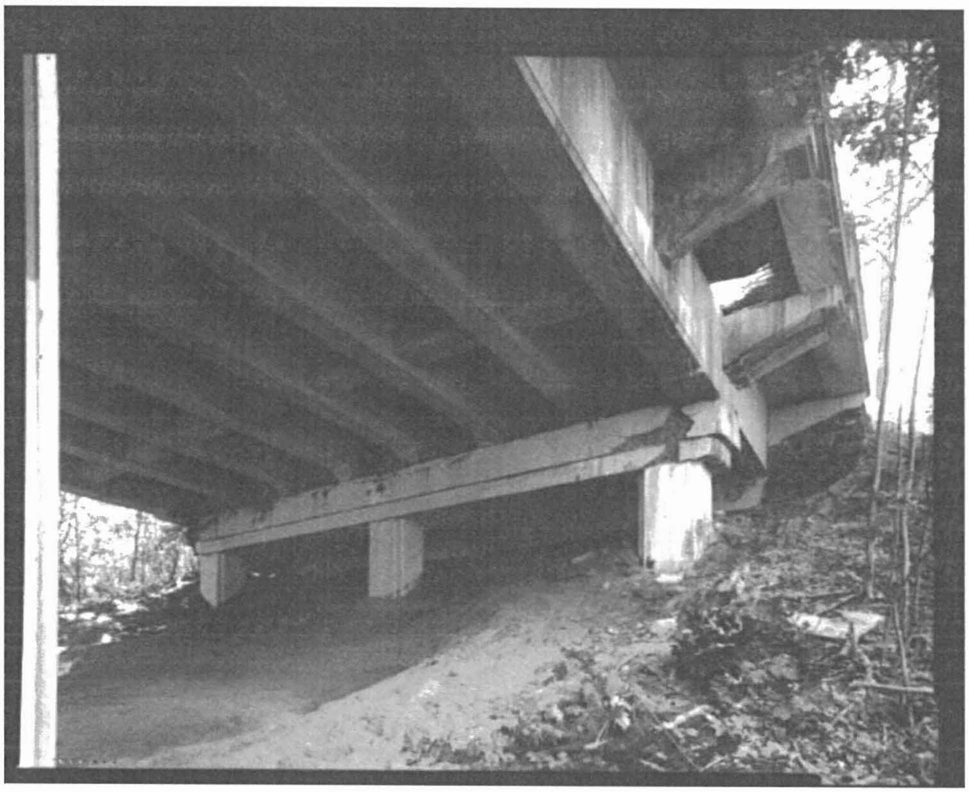

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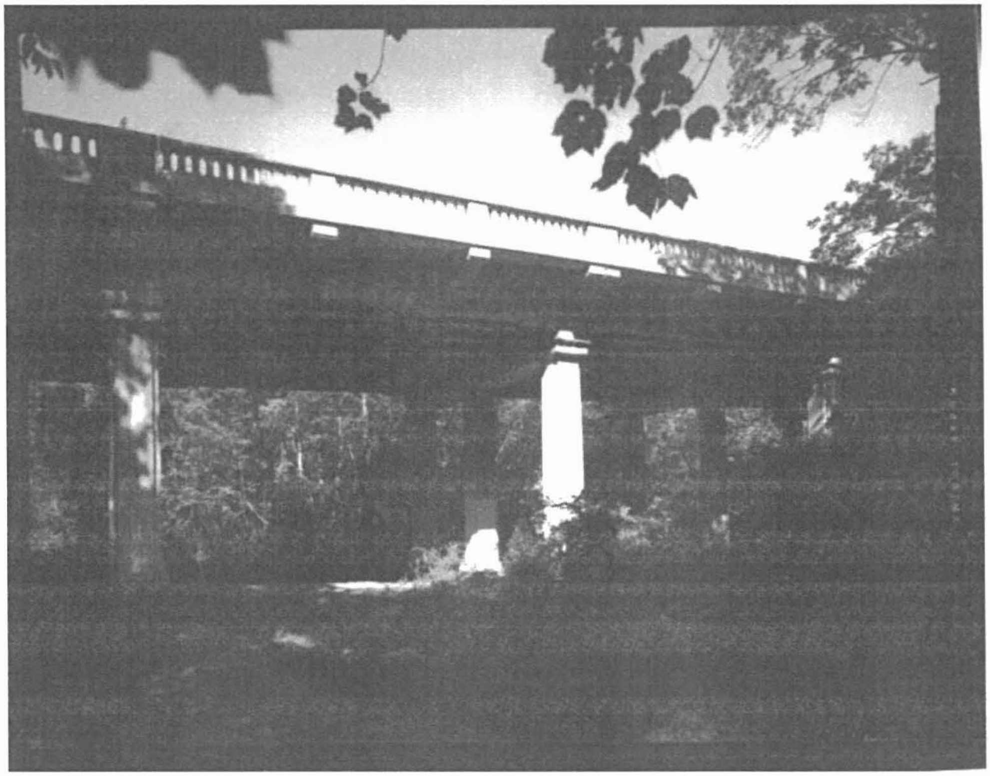
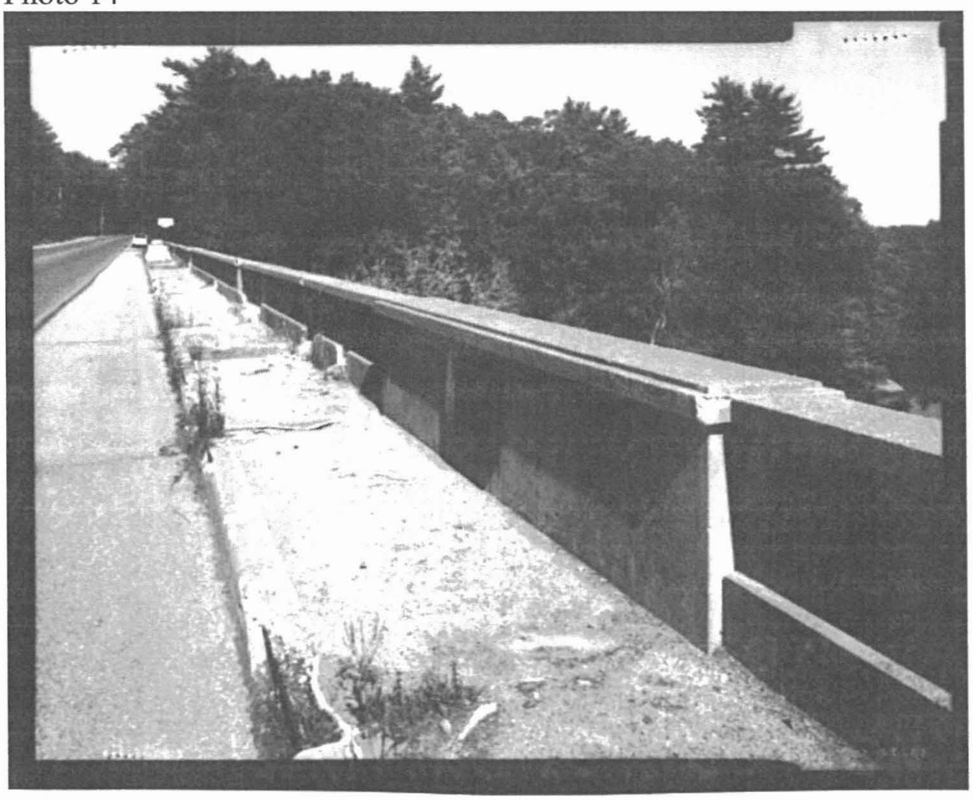


Photo 14



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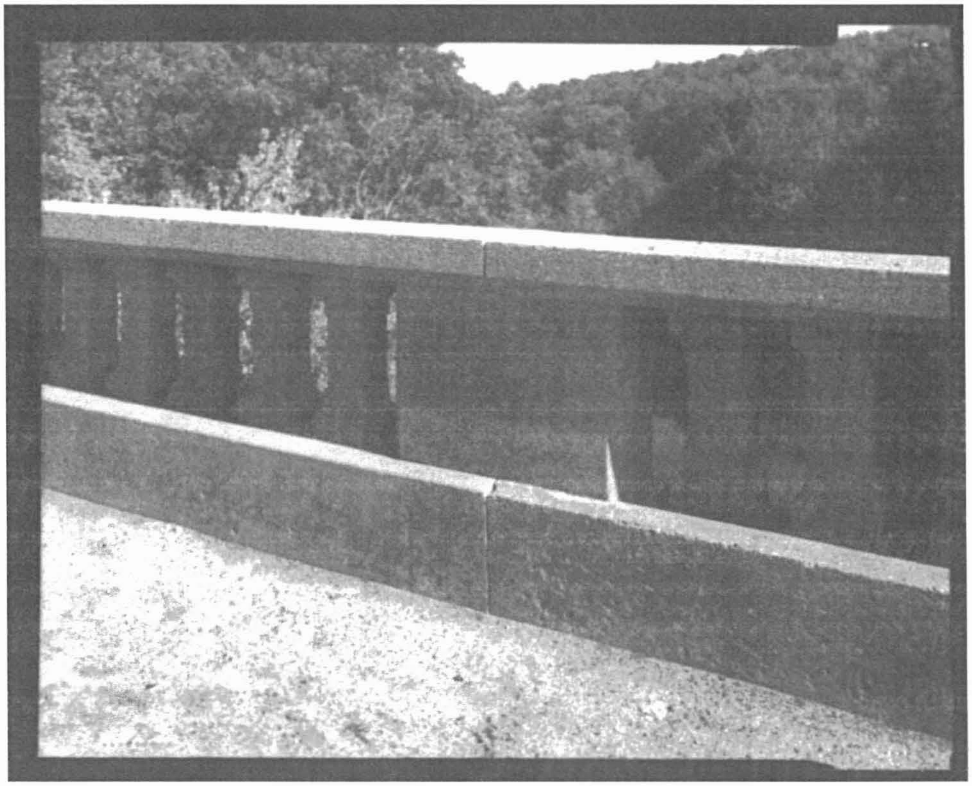

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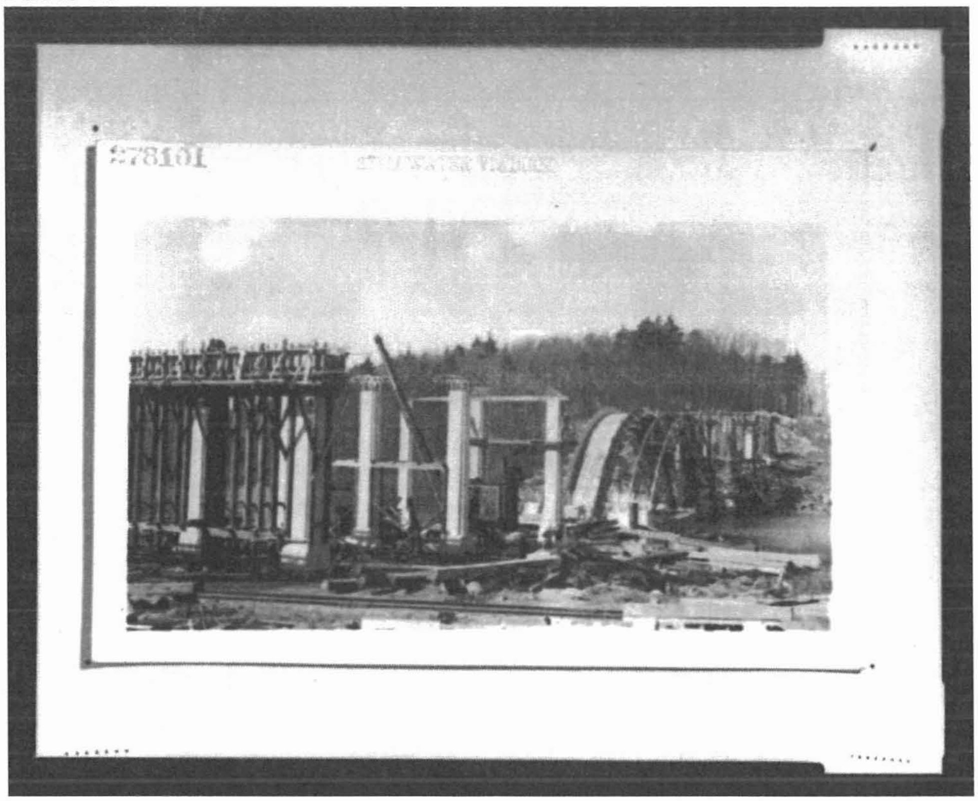
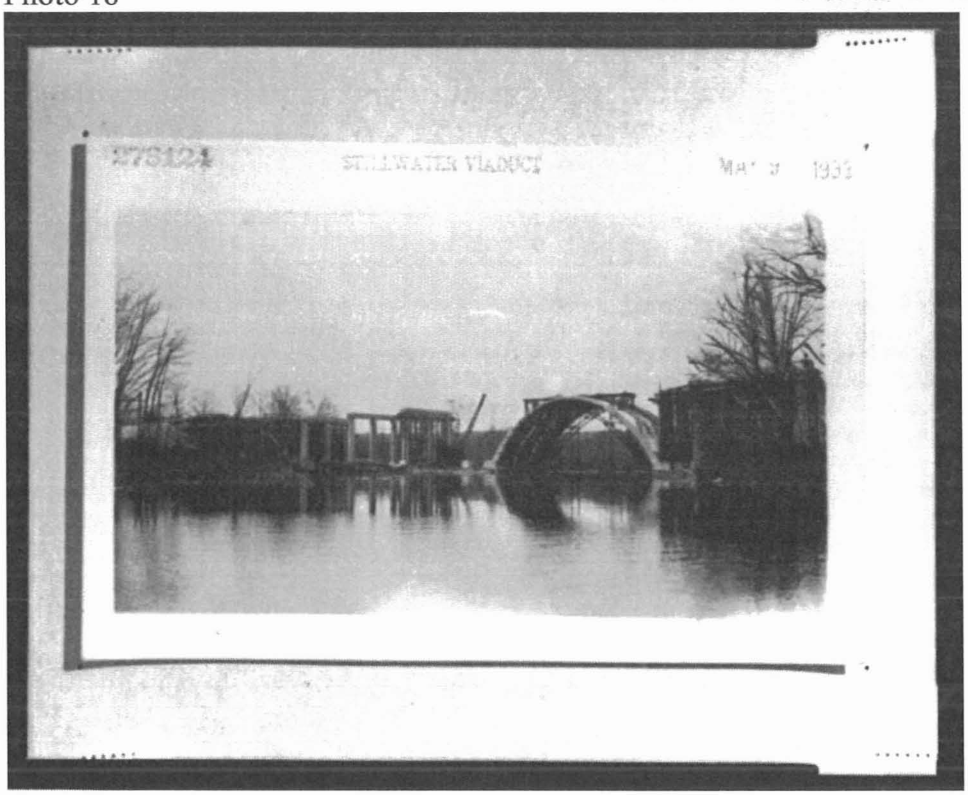


Photo 17

Photo 18



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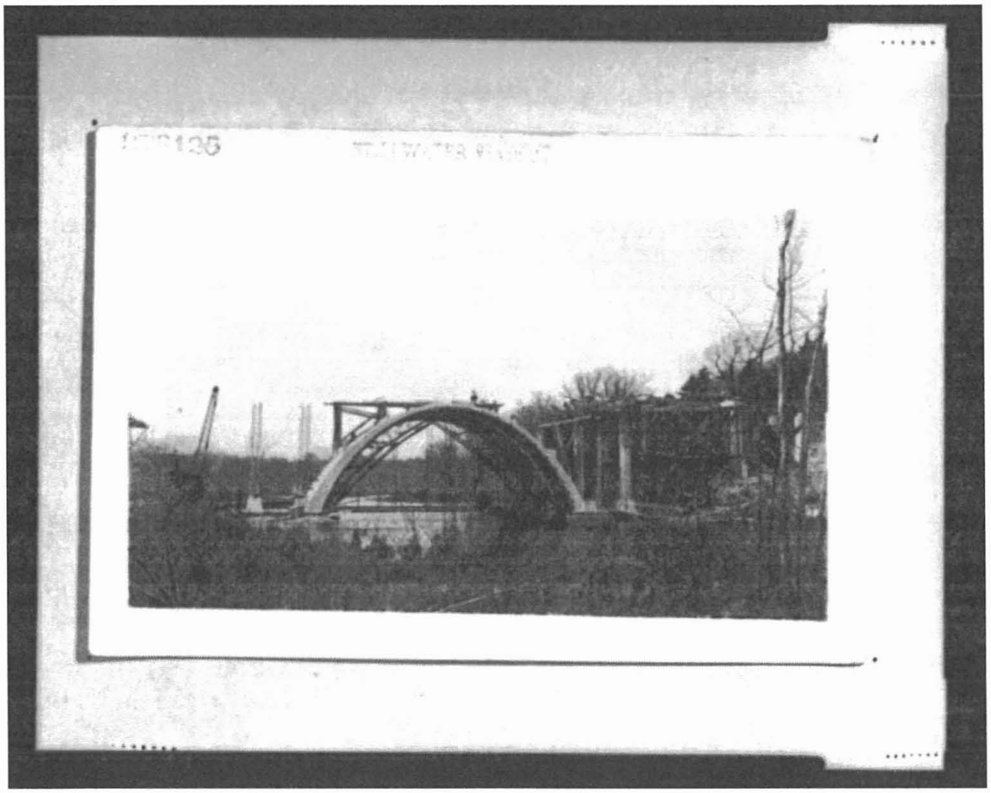

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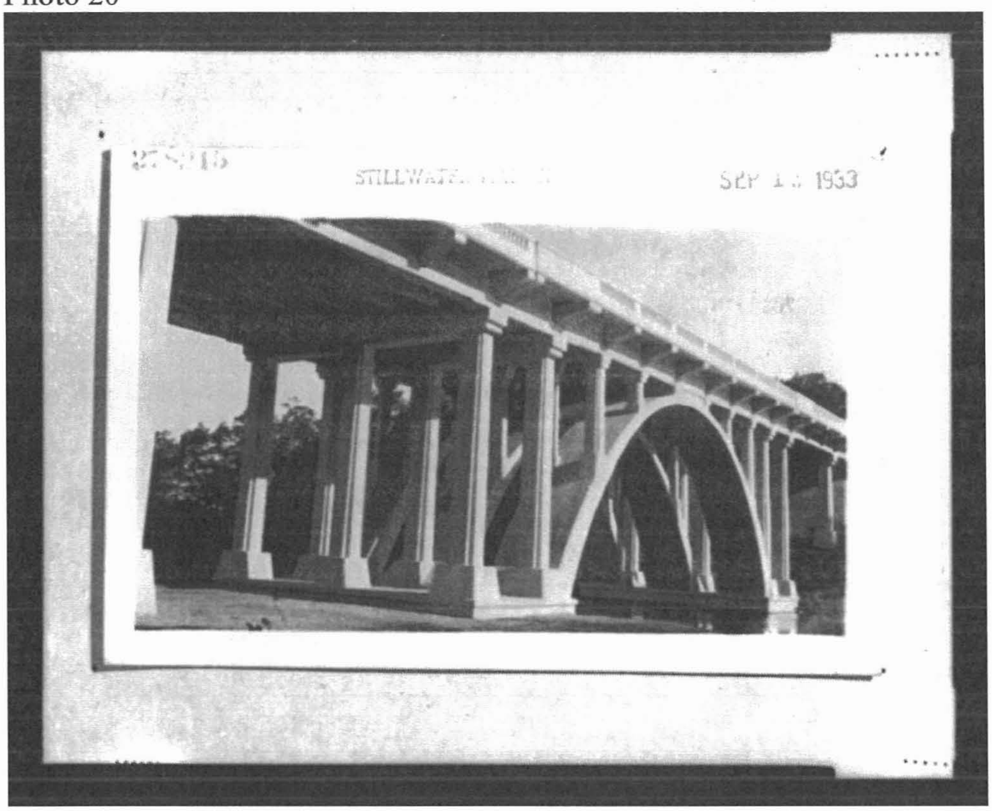

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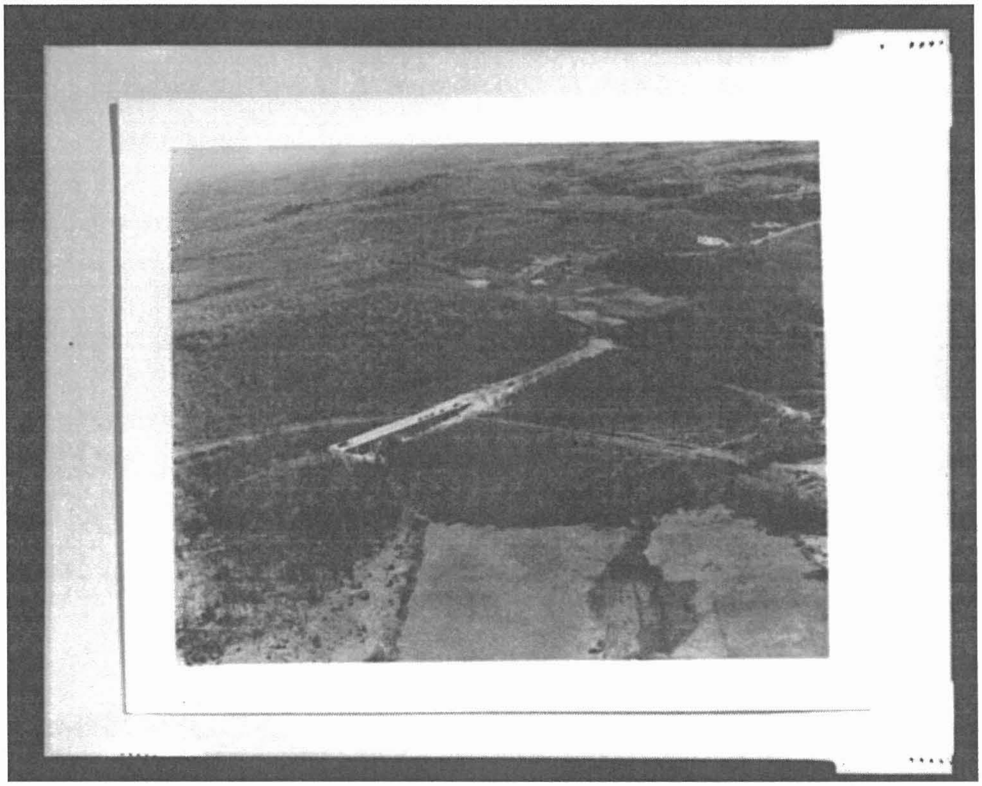

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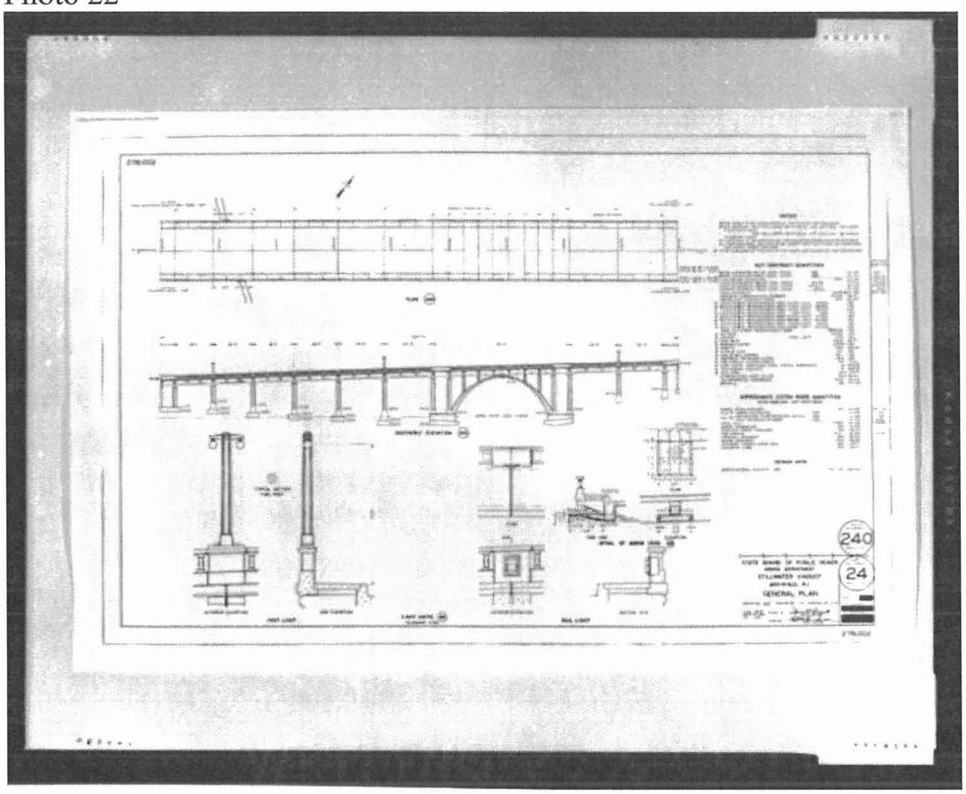

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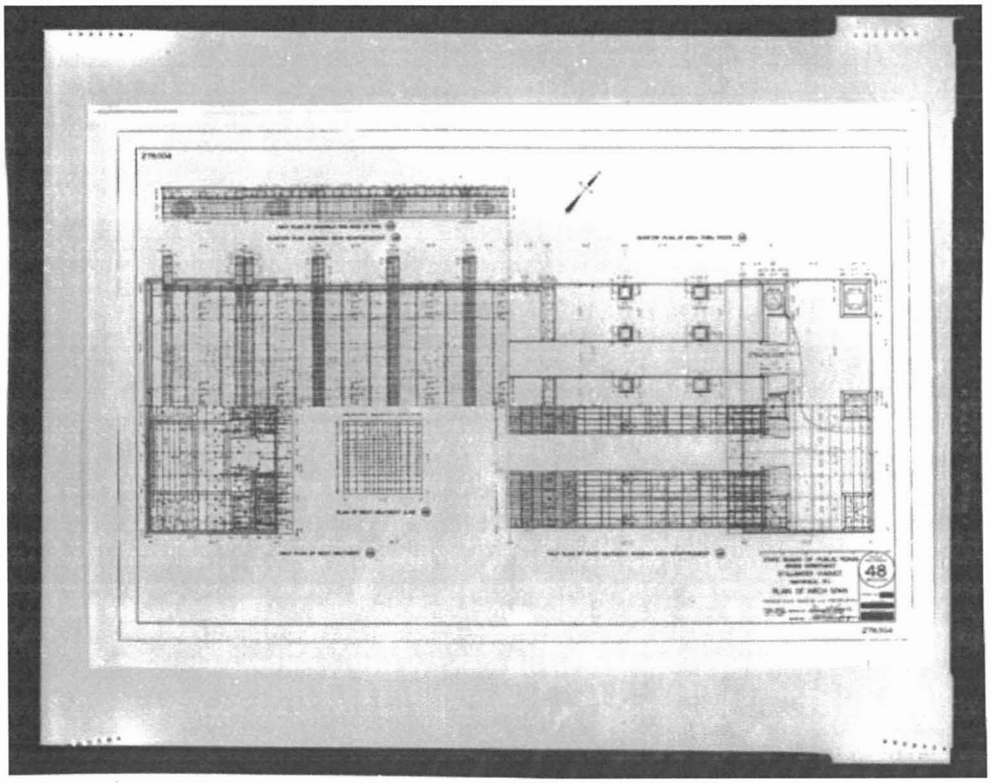

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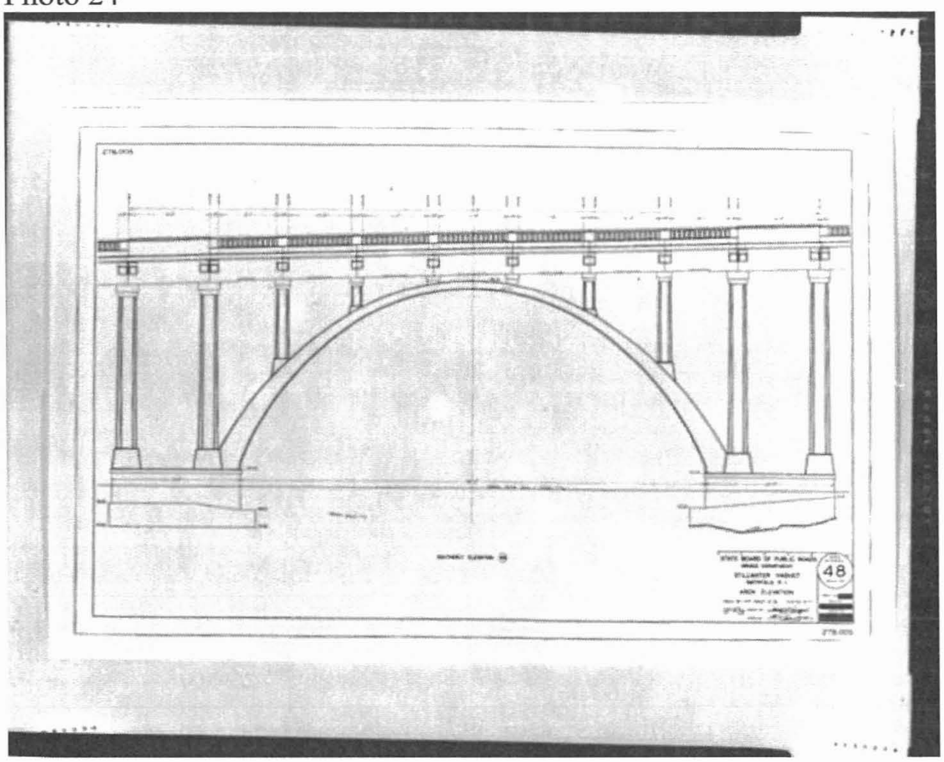

Photo 25

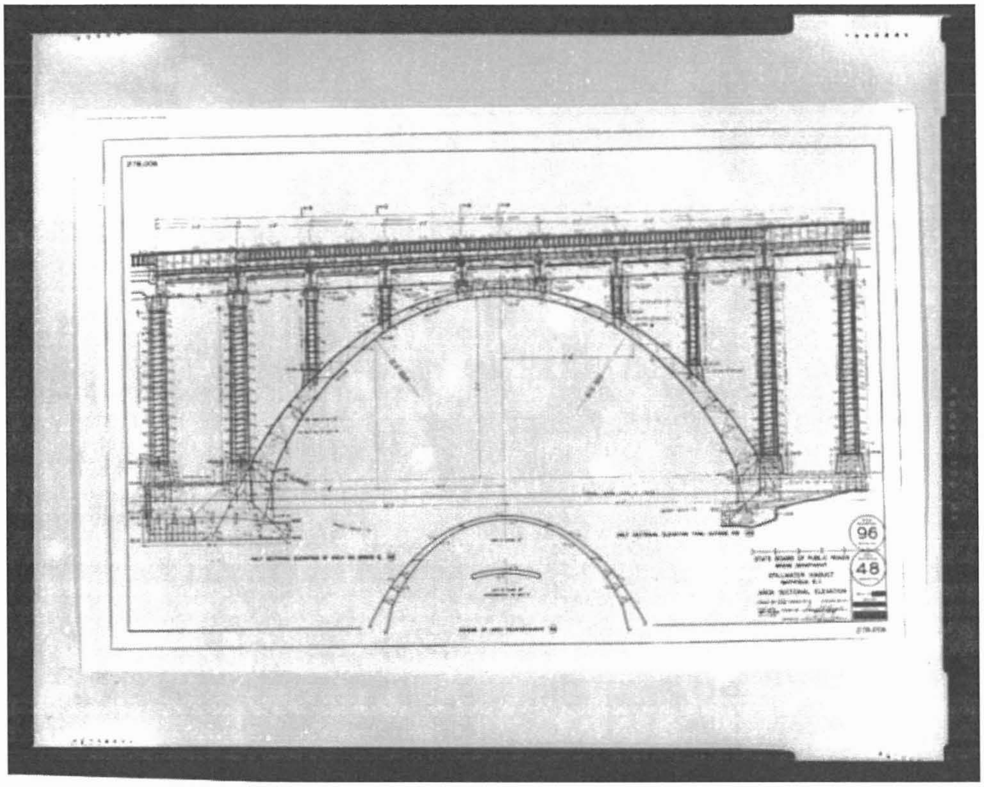

Photo 26